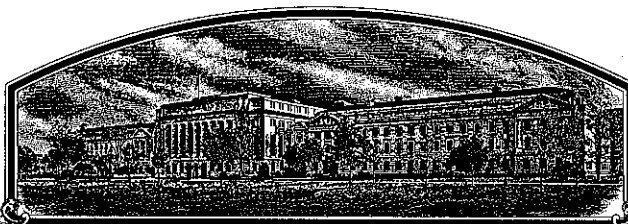


No.

9100061



# THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME;

The Curators of the University of Missouri

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF *eighteen* YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. THE UNITED STATES SEED OF THIS VARIETY (1) SHALL BE SOLD BY VARIETY NAME ONLY AS OF CERTIFIED SEED AND (2) SHALL CONFORM TO THE NUMBER OF GENERATIONS BY THE OWNER OF THE RIGHTS. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

SOYBEAN

'Delsoy 4500'

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this *31st* day of *March* in the year of our Lord one thousand nine hundred and ninety-two.

Attest:

*Kenneth H. ...*  
Commissioner  
Plant Variety Protection Office  
Agricultural Marketing Service

*Edward Madigan*  
Secretary of Agriculture

U.S. DEPARTMENT OF AGRICULTURE  
AGRICULTURAL MARKETING SERVICE

# APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(Instructions on reverse)

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2428).

1. NAME OF APPLICANT(S) (as it is to appear on the Certificate) The Curators of the University of Missouri		2. TEMPORARY DESIGNATION OR EXPERIMENTAL NO. S83-1004	3. VARIETY NAME Delsoy 4500
4. ADDRESS (street and no. or R.F.D. no., city, state, and ZIP) 321 University Hall Columbia, MO. 65211		5. PHONE (include area code) 314-882-3211	<b>FOR OFFICIAL USE ONLY</b> VPPO NUMBER 9100061 F I L I N G Date Jan. 4, 1991 Time <input type="checkbox"/> A.M. <input type="checkbox"/> P.M. F E E S Filing and Examination Fee: \$ 2150. <sup>00</sup> Date Jan. 4, 1991 R E C E I V E D Certificate Fee: \$ 250. <sup>00</sup> Date Mar. 2, 1992
6. GENUS AND SPECIES NAME Glycine max (L.) Merr.	7. FAMILY NAME (Botanical) Leguminosae		
8. CROP KIND NAME (Common Name) Soybean	9. DATE OF DETERMINATION 11-28-89		
10. IF THE APPLICANT NAMED IS NOT A "PERSON," GIVE FORM OF ORGANIZATION (Corporation, partnership, association, etc.) Educational Organization			
11. IF INCORPORATED, GIVE STATE OF INCORPORATION Missouri		12. DATE OF INCORPORATION	
13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS Dr. S. C. Anand University of Missouri Delta Center Portageville, MO. 63873			

PHONE (include area code): 314-379-5431

14. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow INSTRUCTIONS on reverse)

a. ☒ Exhibit A, Origin and Breeding History of the Variety.

b. ☒ Exhibit B, Novelty Statement.

c. ☒ Exhibit C, Objective Description of Variety.

d. ☒ Exhibit D, Additional Description of Variety.

e. ☒ Exhibit E, Statement of the Basis of Applicant's Ownership.

f. ☒ Seed Sample (2,500 viable untreated seeds). Date Seed Sample mailed to Plant Variety Protection Office 11-9-90

g. ☒ Filing and Examination Fee (\$2,150) made payable to "Treasurer of the United States."

15. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? (See section 83(a) of the Plant Variety Protection Act.)  
☒ YES (If "YES," answer items 16 and 17 below) ☐ NO (If "NO," skip to item 18 below)

16. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?  
☒ YES ☐ NO

17. IF "YES" TO ITEM 16, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED?  
☒ FOUNDATION ☒ REGISTERED ☒ CERTIFIED

18. DID THE APPLICANT(S) PREVIOUSLY FILE FOR PROTECTION OF THE VARIETY IN THE U.S.?  
☐ YES (If "YES," through ☐ Plant Variety Protection Act ☐ Patent Act. Give date: \_\_\_\_\_.)  
☒ NO

19. HAS THE VARIETY BEEN RELEASED, USED, OFFERED FOR SALE, OR MARKETING IN THE U.S. OR OTHER COUNTRIES?  
☒ YES (If "YES," give names of countries and dates) IN U.S. 5-1-90  
☐ NO

20. The applicant(s) declare(s) that a viable sample of basic seeds of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable.

The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in section 41, and is entitled to protection under the provisions of section 42 of the Plant Variety Protection Act.

Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

SIGNATURE OF APPLICANT [Owner(s)]  LEGAL FORM BUSINESS SERVICES 11/29/90 AS TO	CAPACITY OR TITLE Jacquelyn K. Jones Director, Business Services	DATE
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**EXHIBIT A****Origin and Breeding History of the Variety**

Delsoy 4500 was selected from the cross 'Cumberland' x 'Forrest'. Early generation selection and testing were done at the Delta Center of the University of Missouri at Portageville, Mo. Individual  $F_3$  plants were evaluated in the greenhouse for reaction to SCN Race 3. Remanent seed from resistant and segregating plants was planted for field evaluation in the cyst nematode nursery at the Rhodes Farm, near Clarkton, MO. Individual plants from  $F_4$  lines were again screened to select homozygous resistant plants. Progenies were grown at the Lee Farm, near Portageville, MO. Seed from individual  $F_5$  progeny were harvested for testing and seed increase. Delsoy 4500 was evaluated under the designation S83-1004 in the Uniform regional Soybean Tests IV North, and Regional SCN Tests IV from 1987 through 1989.

By and large, Delsoy 4500 has maintained its uniformity and stability by reproduction through seed except slight variability for hila color which is stated in Exhibit D.

EXHIBIT BNovelty Statement

'Delsoy 4500' most closely resembles 'Corsoy' in plant type however, Delsoy 4500 is resistant to Race 3 of soybean cyst nematode (Heterodera glycines Ichinohe) whereas, Corsoy is susceptible. Delsoy 4500 has white flowers, on the other hand Corsoy has purple flowers. In maturity, Delsoy 4500 is very similar to Douglas, but Delsoy 4500 has grey pubescence, whereas Douglas has tawny pubescence.

U.S. DEPARTMENT OF AGRICULTURE  
AGRICULTURAL MARKETING SERVICE

EXHIBIT C  
(Soybean)

PLANT VARIETY PROTECTION OFFICE  
BELTSVILLE, MARYLAND 20705

OBJECTIVE DESCRIPTION OF VARIETY  
SOYBEAN (*Glycine max* L.)

NAME OF APPLICANT(S) The Curators of the University of Missouri	TEMPORARY DESIGNATION S83-1004	VARIETY NAME Delsoy 4500
ADDRESS (Street and No., or R.F.D. No., City, State, and Zip Code) 321 University Hall Columbia, MO. 65211		FOR OFFICIAL USE ONLY PVPO NUMBER 9100061

Choose the appropriate response which characterizes the variety in the features described below. When the number of significant digits in your answer is fewer than the number of boxes provided, place a zero in the first box when number is 9 or less (e.g.,   ). Starred characters ★ are considered fundamental to an adequate soybean variety description. Other characters should be described when information is available.

1. SEED SHAPE:



1 = Spherical (L/W, L/T, and T/W ratios = < 1.2)

3 = Elongate (L/T ratio > 1.2; T/W = < 1.2)

2 = Spherical Flattened (L/W ratio > 1.2; L/T ratio = < 1.2)

4 = Elongate Flattened (L/T ratio > 1.2; T/W > 1.2)

★ 2. SEED COAT COLOR: (Mature Seed)

1 = Yellow

2 = Green

3 = Brown

4 = Black

5 = Other (Specify) \_\_\_\_\_

3. SEED COAT LUSTER: (Mature Hand Shelled Seed)

1 = Dull ('Corsoy 79'; 'Braxton')

2 = Shiny ('Nebsoy'; 'Gasoy 17')

★ 4. SEED SIZE: (Mature Seed)

Grams per 100 seeds

★ 5. HILUM COLOR: (Mature Seed)

1 = Buff

2 = Yellow

3 = Brown

4 = Gray

5 = Imperfect Black

6 = Black

7 = Other (Specify) \_\_\_\_\_

★ 6. COTYLEDON COLOR: (Mature Seed)

1 = Yellow

2 = Green

★ 7. SEED PROTEIN PEROXIDASE ACTIVITY:

1 = Low

2 = High

★ 8. SEED PROTEIN ELECTROPHORETIC BAND:

1 = Type A (SP1<sup>a</sup>)

2 = Type B (SP1<sup>b</sup>)

★ 9. HYPOCOTYL COLOR:

1 = Green only ('Evans'; 'Davis')

2 = Green with bronze band below cotyledons ('Woodworth'; 'Tracy')

3 = Light Purple below cotyledons ('Beeson'; 'Pickett 71')

4 = Dark Purple extending to unifoliate leaves ('Hodgson'; 'Coker Hampton 266A')

★ 10. LEAFLET SHAPE:

1 = Lanceolate

2 = Oval

3 = Ovate

4 = Other (Specify) \_\_\_\_\_

11. LEAFLET SIZE:

2

1 = Small ('Amsoy 71'; 'A5312')  
3 = Large ('Crawford'; 'Tracy')

2 = Medium ('Corsoy 79'; 'Gasoy 17')

12. LEAF COLOR:

2

1 = Light Green ('Weber'; 'York')  
3 = Dark Green ('Gnome'; 'Tracy')

2 = Medium Green ('Corsoy 79'; 'Braxton')

★ 13. FLOWER COLOR:

1

1 = White

2 = Purple

3 = White with purple throat

★ 14. POD COLOR:

1

1 = Tan

2 = Brown

3 = Black

★ 15. PLANT PUBESCENCE COLOR:

1

1 = Gray

2 = Brown (Tawny)

16. PLANT TYPES:

2

1 = Slender ('Essex'; 'Amsoy 71')  
3 = Bushy ('Gnome'; 'Govan')

2 = Intermediate ('Amcor'; 'Braxton')

★ 17. PLANT HABIT:

3

1 = Determinate ('Gnome'; 'Braxton')

2 = Semi-Determinate ('Will')

3 = Indeterminate ('Nebsoy'; 'Improved Pelican')

★ 18. MATURITY GROUP:

0 7

1 = 000

2 = 00

3 = 0

4 = I

5 = II

6 = III

7 = IV

8 = V

9 = VI

10 = VII

11 = VIII

12 = IX

13 = X

★ 19. DISEASE REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

BACTERIAL DISEASES:

★ 0 Bacterial Pustule (*Xanthomonas phaseoli* var. *sojensis*)

★ 0 Bacterial Blight (*Pseudomonas glycinea*)

★ 0 Wildfire (*Pseudomonas tabaci*)

FUNGAL DISEASES:

★ 0 Brown Spot (*Septoria glycines*)

Frogeye Leaf Spot (*Cercospora sojae*)

★ 0 Race 1 0 Race 2 0 Race 3 0 Race 4 0 Race 5 0 Other (Specify)

0 Target Spot (*Corynespora cassiicola*)

0 Downy Mildew (*Peronospora trifoliorum* var. *manshurica*)

0 Powdery Mildew (*Microsphaera diffusa*)

★ 0 Brown Stem Rot (*Cephalosporium gregatum*)

0 Stem Canker (*Diaporthe phaseolorum* var. *caulivora*)

5

19. DISEASE REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant) (Continued)

FUNGAL DISEASES: (Continued)

- ★  Pod and Stem Blight (*Diaporthe phaseolorum* var. *sojae*)
- Purple Seed Stain (*Cercospora kikuchii*)
- Rhizoctonia Root Rot (*Rhizoctonia solani*)
- Phytophthora Rot (*Phytophthora megasperma* var. *sojae*)
- ★  Race 1  Race 2  Race 3  Race 4  Race 5  Race 6  Race 7
- Race 8  Race 9  Other (Specify) \_\_\_\_\_

VIRAL DISEASES:

- Bud Blight (Tobacco Ringspot Virus)
- Yellow Mosaic (Bean Yellow Mosaic Virus)
- ★  Cowpea Mosaic (Cowpea Chlorotic Virus)
- Pod Mottle (Bean Pod Mottle Virus)
- ★  Seed Mottle (Soybean Mosaic Virus)

NEMATODE DISEASES:

- Soybean Cyst Nematode (*Heterodera glycines*)
- ★  Race 1  Race 2  Race 3  Race 4  Other (Specify) \_\_\_\_\_
- Lance Nematode (*Hoplolaimus Colonus*)
- ★  Southern Root Knot Nematode (*Meloidogyne incognita*)
- ★  Northern Root Knot Nematode (*Meloidogyne Hapla*)
- Peanut Root Knot Nematode (*Meloidogyne arenaria*)
- Reniform Nematode (*Rotylenchulus reniformis*)
- OTHER DISEASE NOT ON FORM (Specify): \_\_\_\_\_

20. PHYSIOLOGICAL RESPONSES: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

- ★  Iron Chlorosis on Calcareous Soil
- Other (Specify) \_\_\_\_\_

21. INSECT REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

- Mexican Bean Beetle (*Epilachna varivestis*)
- Potato Leaf Hopper (*Empoasca fabae*)
- Other (Specify) \_\_\_\_\_

22. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED.

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant Shape	Corseý	Seed Coat Luster	Cumberland
Leaf Shape	Williams	Seed Size	Davis
Leaf Color	Cumberland	Seed Shape	Davis
Leaf Size	Williams	Seedling Pigmentation	Davis

23. GIVE DATA FOR SUBMITTED AND SIMILAR STANDARD VARIETY: Paired Comparison Data

VARIETY	NO. OF DAYS MATURITY	PLANT LODGING SCORE	CM PLANT HEIGHT	LEAFLET SIZE		SEED CONTENT		SEED SIZE G/100 SEEDS	NO. SEEDS/POD
				CM Width	CM Length	% Protein	% Oil		
Submitted	121	1.7	105	7.0	12.5	39.8	21.0	11.2	3.2
Douglas Name of Similar Variety	122	1.4	95	8.5	12.9	40.9	20.9	14.7	3.2

PUBLICATIONS USEFUL AS REFERENCE AIDS FOR COMPLETING THIS FORM:

1. Caldwell, B.E., ed. 1973. Soybeans: Improvement, Production, and Uses. Amer. Soc. Agron. Monograph No. 16.
2. Buttery, B.R. and R.I. Buzzell. 1968. Peroxidase activity in seeds of soybean varieties. Crop Sci., 8: 722-725.
3. Hymowitz, T. 1973. Electrophoretic analysis of SBTI-A<sub>2</sub> in the USDA soybean germplasm collection. Crop Sci., 13: 420-421.
4. Payne, R.C. and L.F. Morris. 1976. Differentiation of soybean cultivars by seedling pigmentation patterns. J. Seed Technol. 1: 1-19.



EXHIBIT DAdditional Description of Variety

Delsoy 4500 seeds have buff hila, however, in few seed samples tested, there were up to 0.1% (by weight) seeds with black or imperfect black hila. Delsoy 4500 is a mid Maturity Group IV soybean similar to Douglas, but is about 10 cm. shorter in plant height.

EXHIBIT EStatement of the Basis of Applicant's Ownership

The variety was developed by the funds and facilities primarily provided by the University of Missouri and the work was done on the University of Missouri Delta Research Station. The Missouri Soybean Merchandising Council provided some funds to the said university which were also utilized in the development of this variety.